

Adopting the policy instruments to Establish ETS in Asia countries

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Abstract. This paper reveals the implement of the policy instruments to establish the Emission Trading Schemes (ETS) in Asia countries. In Asia, there are three countries—Japan, South Korea and Taiwan – plan to establish the nation’s ETS, and two of them have already proposed the bills of it. In order to probe the key factors of establishing ETS, this paper analyzes the components of EU ETS and has identified three types of policy instruments that can be focused on by which who wants to construct ETS. These three types of policy instruments were regulatory /voluntary, market-based instruments, and penalty/ subsidy.

Keywords: ETS, Emission Trading, policy instrument, EU ETS

1. Introduction and Background

In order to confront the climate change, the members of the United Nation signed the Kyoto Protocol in 1997, and the Protocol become effective in 2005. In theory, the Protocol set up the rules of emission trading to regulate the participative countries through three mechanisms – Emission Trading (ET), Clean Development Mechanism (CDM) and Joint Implement (JI). Within those mechanisms, Emission Trading Scheme (ETS) was set up under the ET and is being regarded as the most effective tool in terms of cost-effective to abate the emissions and to lower the transaction costs. Up to recent, the EU ETS is the largest and the first international mandatory cap-and-trade ETS in the world (ECCA, 2011). Outside the EU, many countries are on their way to establish national mandatory ETS markets, although there are some volunteer or regional- based ETS markets in Americas, Australia, and Japan. As the biggest mandatory ETS, EU set up an example and resourceful data of constructing successful ETS for others. By reviewing the key components of EU ETS as resources, this paper identifies three types of policy instruments which might help others, in this paper’s case, Japan, South Korea, and Taiwan, to build up their ETS markets.

2. The EU ETS

EU ETS, established in 2005, is the largest, international cap-and-trade emission trading system. It is the largest emission trading market in the world; its value was growing sharply from around 8 billion of year 2005 to more than 120 billion of year 2010 (The World Bank, 2011). Besides, its value of allowances is almost the same as the value of the allowance-based transactions market (see figure 1). The expansion of EU ETS provides a good example to others who want to establish the emission trading systems in terms of its resourceful materials such as paper documents, regulations, data collections, and so on. The development of the EU ETS can be decomposed to three periods: 2005-2007, 2008-2012 and 2013-2020. In each period, EU set up its key components and three policy instruments, regulatory/voluntary, market-based instrument, and penalty/subsidy, had been used to reinforce and integrate its systems by learning from doing. These three types of the policy instruments were complementary and can not be substitute. The first policy tool—regulatory or voluntary—provided the basic information for constructing the ETS and supported the regulations of the market-based instruments. The second policy tool—market-based instrument—mainly

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discussed about trading in the carbon market, included allowances, banking, borrowing and offset. The third policy tool—penalty and subsidy—was the way to encourage participants to become more efficient. Besides, it is important to note that the first and second types of policy instruments were made and declared specifically in EU ETS, while the third type of instrument were not. However, the third type of policy instrument may be essential to ETS market because penalty restrained the participants not to discharge over their allowances, and subsidies encouraged them to commit and reduced the emissions.

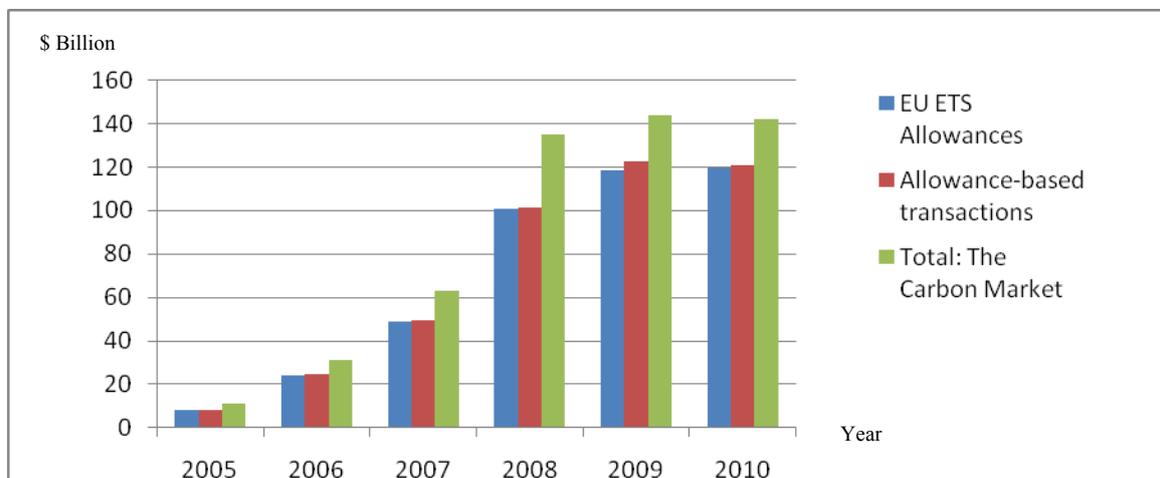


Figure 1 Emission Trading Market Evolution, values (\$ billion), 2005-2010
Data source: State and Trends of the Carbon Market 2011, The World Bank, 2011

Table 1 The EU ETS

EU ETS			
	Phase I	Phase II	Phase III
Regulatory or voluntary			
Scope	27 EU member countries	Operates in 30 countries (the 27 EU Member States plus Iceland, Liechtenstein and Norway)	EU Member States and participants in EU ETS
Coverage	CO ₂	Covers only CO ₂ , but member states can “opt in” other gases. For example, Netherlands and Australia have opted to include nitrous oxide (N ₂ O) emissions from some specific installations	As Phase II , additional gases such as N ₂ O, per fluorocarbons (PFCs) will be added
Sources	Power stations, combustion plants, oil refineries, coke ovens, I & S, cement, glass, lime, brick, ceramics, pulp and paper	As Phase I: Power stations, combustion plants, oil refineries and iron and steel works, cement, glass, lime, bricks, ceramics, pulp, paper	As Phase II , maybe expanded to petrochemicals, ammonia and aluminum industries
Mandatory/ Voluntary	Mandatory	Mandatory	Mandatory
Participants	Emitters	Emitters	Emitters
Target	Cap-and-Trade	Cap-and-Trade	Cap-and-Trade
Timescale	2005-2007	2008-2012	2013-2020
Reporting and Monitoring	Yes	Yes	Yes

Price-cap	N/A	N/A	N/A
New entrant reserve	Yes	Yes	Yes: Up to 300 million allowances for the new entrant reserve; will be used to support the demonstration of carbon capture and storage (CCS) and innovative renewable technologies. ¹
Unit	1 metric ton CO ₂ -eq	1 metric ton CO ₂ -eq	1 metric ton CO ₂ -eq
Market-based instruments			
Allowances	Free of charge: 95% Most commonly used grandfathering ² ; rarely adopted benchmarking. Auction: 5% can be auctioned; only Denmark chose to auction full 5%.	Free of charge: 90% Most of the participants used of benchmarking, but this using almost entirely in the power sectors. Auction: Can auction up to 10%; only 11 Member States have decided to use auction.	Free of charge in industry: Benchmark: 1. set on the basis of the average of the top 10% of most GHG efficient installations 2. Sectors which have 100% of allowances are deemed to be the group that have highly possibility to relocate outside the EU due to the carbon price Auction: At least 50% of allowances will be auctioned from 2013, but the auction of allowances in power sectors will be up to 100%
Banking	In principle, No. (Allowed in some countries)	Yes	Yes ³
Borrowing	NO	NO	NO
Offsets	Yes: CDM(excluding forestry)	Yes: CDM(excluding forestry) JI	Yes: CDM and JI maybe continued, but the requirement of reducing emissions should be accomplished by renewable energy or resources after 2020, in condition of having international agreement. ⁴
Penalty and subsidy			
Financial incentives	N/A	N/A	N/A
Penalty	Yes: €40 Shortfall to be made up in the following year	Yes: €100 Shortfall would be made up	The excess emissions penalty of allowances issued from 2003 onwards shall increase in accordance with the European index of consumer prices.

Source: arrangement by the Author

3. The ETS of South Korea, Taiwan and Japan

The constructing of EU ETS provides a good resource for other countries to consult or imitate. Obviously, the conception of framing ETS is easy to understand, but the components in detail of running it

¹ After2020, all new entrants reserve will be auctioned.

² But more countries use benchmarking especially for the power sector.

³ Member States cannot over bank CERs and ERUs (limited rights), and that can only bank for 2015 under international agreement. They need to choose to have limited rights to bank credits before2012, so that they can transfer valid credits from 2013 onwards.

⁴ EU Commission hopes that there may have real, additional reductions through promoting energy efficiency, innovation and technology development in third countries. The way to do so is having international agreement between Community and third countries.

efficiently are not that simple. By employing three types of policy instruments identified from EU ETS, constructing ETS, especially the part of making the regulations or rules, should be much easier than work blindly. Policy instruments do provide insight perspectives of establishing ETS and would be a resourceful reference for others attempted to set it up. In Asia, Japan, South Korea, and Taiwan are blueprinting the national ETS markets. Japan has already have Japan's Voluntary Emission Trading Scheme (JVETS), and now they attempt to establish the national ETS market by using their experience of running JVETS as well as their learning from EU ETS. The government of South Korea and Taiwan launched a new project to construct the ETS market through "The Carbon-Emission Trading Bill" and "The Greenhouse Gas Reduction Bill", respectively, and the policy instruments were embedded in the framework of both ETS blueprints. To note that the use of the policy instruments to frame their ETS markets is the projection of the importance of EU ETS in terms of its value of helping others by its abundant data. Table 2 shows the components of EU ETS to blend into Asian ETS markets.

Table 2 The ETS blueprints of South Korea and Taiwan

ETS	South Korea	Taiwan	Japan, JVETS
Regulatory or voluntary			
Scope	Nation	Nation	In Japan
Coverage	6GHG	6GHG	CO2
Sources	The major emitters	Designated sources and new entrants	Industry: food, breweries, pulp, chemicals
Mandatory/ Voluntary	Mandatory: The Carbon-Emission Trading Bill	Mandatory: The Greenhouse Gas Reduction Bill	Voluntary
Participants	More than 370 local companies need to set up the GHG reduction target	Emitters: The Environmental Impact Assessment (EIA) commitment; Voluntary buyers	Emitters who have subsidy, no subsidy or want to realize
Target	Cap-and-Trade	Cap-and-Trade	Cap-and-Trade
Time scale	Plan to start between 2013-2015	Uncertainty: After passing the GHG Reduction Bill	2005-2012 (totally six periods)
Reporting and Monitoring	N/A	Yes Verify by the third party	Yes
New entrant reserve	N/A	Yes New entrants who's businesses reach the certain scale or emitters who changed their emission sources, in condition of adopting the best Available Techniques (BAT)	N/A
Unit	1 metric ton CO2-eq	N/A	1 metric ton CO2-eq
Market-based instruments			
Allowances	Free of charge: Plan to give more than 95% of carbon credits in the first three year The remainder is set to be auctioned	Free of charge: grandfathering allocation to the sectors Reserve the specific proportion to auction	Free of charge: Grandfathering, based on past three years
Banking	Yes	N/A	Yes
Borrowing	Yes	NO	NO
Offset	N/A	Yes CDM, excluded nuclear power	Yes: CDM
Penalty and subsidy			

Financial incentives	N/A	Maybe having some awards or subsidies	The government gives the subsidies for the equipments to reduce CO2 emissions or improve energy efficiency
Penalty	Yes The fine of over emissions will be as much as 10 million won	Yes The excess emissions would be punished for between NTD 20,000 to 2,000,000 (USD 6896.55-68965.52) and the shortfall need to be made up in the following year	No penalty But the companies who got the subsidies must be returned

Source: arrangement by the Author

4. Conclusion

Policy instruments can be a useful tool for countries attempted to construct the ETS market. By understanding the implements and the functions of each type of instruments of EU ETS, EU ETS could be a resourceful data base in helping to set up the ETS markets all over the world.

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